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AR201-13165

"Brandwene, D (David)" <David.Brandwene@akzo-nobel.com> on 09/07/2001 11:13:49 AM

To: NCIC OPPT/DC/USEPA/US@EPA, Rtk Chem/DC/USEPA/US@EPA
cc:

Subject: Robust Summaries and Test Plans

For the HPV Program, attached in IUCLID format are the robust summaries for phenol, tert-Bu derivs., phosphates (3:1)
(CAS# 220352-35-2, replacing CAS# 68937-40-6) and phenol, dimethyl phosphate (3:1) (CAS# 25155-23-1) submitted by Akzo Nobel Functional Chemicals LLC - Phosphorous Chemicals. The test plans are also included. The commitment letter to the HPV Program is dated 3/12/99. An Internal Agency Tracking Number on the EPA website is 201-01416.
Thanks.

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Akzo Nobel Chemicals Inc.
5 Livingstone Avenue
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<<BuTPP Final final dossier 822001.ZIP>> <<txp TEST PLAN 7232001.ZIP>>

BuTPP Final final dossier 822001.ZIP txp TEST PLAN 7232001.ZIP

TEST PLAN

And

ROBUST SUMMARIES

For

TRIXYLENYL PHOSPHATE

CAS No. 25155-23-1

Prepared by

Akzo Nobel Functional Chemicals LLC
5 Livingstone Avenue
Dobbs Ferry, NY 10522

July 23, 2001

TEST PLAN

TRIXYLENYL PHOSPHATE
(CAS #25155-23-1)

Study Type	Data Available	Data Acceptable	Testing Required
Physical/Chemical Characteristics			
Melting Point	NA	NA	No
Boiling Point	yes	Yes	No
Vapor Pressure	Yes	Yes	No
Partition Coefficient	Yes	Yes	No
Water Solubility	Yes	No	Yes
Environmental Fate			
Photodegradation	No	NA	Yes
Stability in Water	No	NA	Yes
Biodegradation	Yes	Yes	No
Fugacity	No	NA	Yes
Acute Toxicity to Fish	Yes	Yes	No
Acute Toxicity to Aquatic Invert.	No	NA	Yes
Toxicity to Aquatic Plants	No	NA	Yes
Human Health Effects			
Acute Toxicity	Yes	Yes	No
General Toxicity (Repeated Dose)	No	NA	Yes
Genetic Toxicity	No	NA	Yes
Reproductive Toxicity	No	NA	Yes
Developmental Toxicity	No	NA	Yes

NA = Not Applicable

I U C L I D

Data Set

Existing Chemical	:	ID: 25155-23-1
CAS No.	:	25155-23-1
TSCA Name	:	Trixylenyl Phosphate

Producer Related Part

Company	:	Akzo Nobel Functional Chemicals
Creation date	:	10.04.2001

Substance Related Part

Company	:	Akzo Nobel Functional Chemicals
Creation date	:	10.04.2001
Memo	:	
Printing date	:	02.08.2001
Revision date	:	
Date of last Update	:	02.08.2001
Number of Pages	:	18
Chapter (profile)	:	Chapter: 1, 2, 3, 4, 5, 7
Reliability (profile)	:	Reliability: without reliability, 1, 2, 3, 4
Flags (profile)	:	Flags: without flag, confidential, non confidential, WGK (DE), TA-Luft (DE), Material Safety Dataset, Risk Assessment, Directive 67/548/EEC, SIDS

1.0.1 OECD AND COMPANY INFORMATION

Type	:	cooperating company
Name	:	Akzo Nobel Functional Chemicals
Partner	:	
Date	:	
Street	:	5 Livingstone Avenue
Town	:	Dobbs Ferry, NY 10522
Country	:	United States
Phone	:	914-674-5394
Telefax	:	914--693-4487
Telex	:	
Cedex	:	

03.05.2001

1.0.2 LOCATION OF PRODUCTION SITE

Name of Plant	:	Akzo Nobel Functional Chemicals LLC
Street	:	P.O. Box 1721
Town	:	Gallipolis Ferry, WV 25515-5721
Country	:	United States
Phone	:	304-675-1150
Telefax	:	
Telex	:	
Cedex	:	
Reliability	:	(1) valid without restriction

01.06.2001

1.0.3 IDENTITY OF RECIPIENTS

1.1 GENERAL SUBSTANCE INFORMATION

Substance type	:	organic
Physical status	:	liquid
Purity	:	= 100 % w/w
Reliability	:	(1) valid without restriction

01.06.2001

1.1.0 DETAILS ON TEMPLATE

1.1.1 SPECTRA

1.2 SYNONYMS

phenol, dimethylphosphate
Reliability : (1) valid without restriction
01.06.2001

phosphoric acid, trixylyl ester
06.06.2001

trixylyl phosphate
01.06.2001

xylenol, phosphate ester
Reliability : (1) valid without restriction
06.06.2001

1.3 IMPURITIES

1.4 ADDITIVES

1.5 QUANTITY

1.6.1 LABELLING

1.6.2 CLASSIFICATION

1.7 USE PATTERN

Type : industrial
Category : Basic industry: basic chemicals
Reliability : (1) valid without restriction
02.08.2001

1.7.1 TECHNOLOGY PRODUCTION/USE

Type : Production
Reliability : (1) valid without restriction
01.06.2001

1.8 OCCUPATIONAL EXPOSURE LIMIT VALUES

1.9 SOURCE OF EXPOSURE

Memo : During production and use
Reliability : (1) valid without restriction
01.06.2001

1.10.1 RECOMMENDATIONS/PRECAUTIONARY MEASURES

Type : Handling
Remark : Wear protective clothing including chemical goggles and/or a face shield and rubber gloves when handling this product to avoid eye and skin contact. Avoid inhaling vapor or mist. Handle in a well-ventillated area. Wash thoroughly after handling.
Reliability : (1) valid without restriction

05.06.2001

Type : Storage
Remark : Store away from foodstuffs and animal feed. Containers should be stored in a cool, dry, well ventilated area away from flammable or oxidizing materials and sources of heat or flame. Prolonged storage at elevated temperatures under wet alkaline or acidic conditions should be avoided to assure product integrity. Carbon steel is the preferred material of construction for storage containers.
Reliability : (1) valid without restriction
04.06.2001

1.10.2 EMERGENCY MEASURES

Type : accidental spillage
Remark : Isolate spill area and restrict access. Stop source of spill if possible without being injured. Dike area to prevent spill from spreading. Soak up product with a suitable absorbent such as clay, sawdust, or kitty litter. Place absorbed material in a chemical waste container for disposal.
05.06.2001

Type : injury to persons (skin)
Remark : Immediately remove contaminated clothing and shoes. Using a safety shower, wash all affected areas with soap and plenty of water for at least 15 minutes. Get medical attention. Wash clothing before reuse. Thoroughly clean or discard contaminated shoes.
05.06.2001

Type : injury to persons (eye)
Remark : Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if worn. Hold eyelids apart during flushing to ensure rinsing of the entire surface of the eye and lids. Get medical attention if irritation develops and persists.
Reliability : (1) valid without restriction
05.06.2001

Type : injury to persons (inhalation)
Remark : If inhaled, remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Reliability : (1) valid without restriction
05.06.2001

Type : injury to persons (oral)
Remark : Get medical attention by calling a physician or a poison control center immediately. Do not induce vomiting unless directed to do so by medical personnel.
Reliability : (1) valid without restriction
05.06.2001

1.11 PACKAGING

Memo : Shipped in carbon steel bulk and drum containers.
Reliability : (1) valid without restriction
05.06.2001

1.12 POSSIB. OF RENDERING SUBST. HARMLESS

1.13 STATEMENTS CONCERNING WASTE

Memo : Any amount not used should be disposed of in accordance with all applicable regulations.
Remark : This product does not meet EPA's criteria of a hazardous waste.
Reliability : (1) valid without restriction
05.06.2001

1.14.1 WATER POLLUTION

1.14.2 MAJOR ACCIDENT HAZARDS

1.14.3 AIR POLLUTION

1.15 ADDITIONAL REMARKS

1.16 LAST LITERATURE SEARCH

Type of Search : External
Chapters covered : 3, 4, 5
Date of search :
23.07.2001

1.17 REVIEWS

1.18 LISTINGS E.G. CHEMICAL INVENTORIES

Type : TSCA
Additional info :
Reliability : (1) valid without restriction
05.06.2001

2.1 MELTING POINT

2.2 BOILING POINT

Value : = 243 - 265 ° C at 13.332 hPa
Reliability : (4) not assignable
23.07.2001 (3)

2.3 DENSITY

2.3.1 GRANULOMETRY

2.4 VAPOUR PRESSURE

Value : = .1333 hPa at 37.8° C
Reliability : (2) valid with restrictions
23.07.2001

2.5 PARTITION COEFFICIENT

Log pow : = 5.63 at 25° C
Method
Year :
GLP : no
Test substance : as prescribed by 1.1 - 1.4
Reliability : (2) valid with restrictions
23.07.2001 (10)

2.6.1 WATER SOLUBILITY

Value : = 1 g/l at 25 ° C
Qualitative :
Pka : at 25 ° C
PH : at and ° C
Method :
Year :
GLP : no
Test substance : as prescribed by 1.1 - 1.4
Reliability : (4) not assignable
23.07.2001 (6)

2.6.2 SURFACE TENSION

2.7 FLASH POINT

Value : = 246.1 ° C
Type : open cup

Method :
Year :
GLP : no
Test substance : as prescribed by 1.1 - 1.4
Reliability : (2) valid with restrictions
06.06.2001 (6)

2.8 AUTO FLAMMABILITY

Value : = 565.6 ° C at
Method :
Year :
GLP : no
Test substance : as prescribed by 1.1 - 1.4
Reliability : (2) valid with restrictions
06.06.2001 (6)

2.9 FLAMMABILITY

2.10 EXPLOSIVE PROPERTIES

Result : not explosive
Reliability : (1) valid without restriction
05.06.2001

2.11 OXIDIZING PROPERTIES

2.12 ADDITIONAL REMARKS

3.1.1 PHOTODEGRADATION

3.1.2 STABILITY IN WATER

3.1.3 STABILITY IN SOIL

3.2 MONITORING DATA

3.3.1 TRANSPORT BETWEEN ENVIRONMENTAL COMPARTMENTS

3.3.2 DISTRIBUTION

3.4 MODE OF DEGRADATION IN ACTUAL USE

3.5 BIODEGRADATION

Type	:	aerobic
Inoculum	:	activated sludge
Contact time	:	
Degradation	:	= 25 % after 175 day
Result	:	other: may be susceptible to biodegradation
Remark	:	A commerical trixylenyl phosphate, Kronitex TXP, was biodegraded by activated sludge. A 65% loss of TXP was observed over 25 weeks. The rate of biodegradation was shown to be dependent on the amount of sludge present and the length of incubation with the sludge.
Reliability	:	(4) not assignable

25.07.2001 (1) (8)

3.6 BOD5, COD OR BOD5/COD RATIO

3.7 BIOACCUMULATION

Species	:	other: Bioconcentration estimated by calculation
Exposure period	:	at 25 degree C
Concentration	:	
Elimination	:	
Method	:	other: calculation from regression-derived equations.
Year	:	1979
GLP	:	no
Test substance	:	as prescribed by 1.1 - 1.4
Result	:	Based upon a water solubility at 25 C of 0.89 ppm and a log Kow of 5.63, estimated bioconcentration factors of 660 and 11,189 were calculated from regression-derived equations using the method in Lyman et al.
Reliability	:	(4) not assignable

25.07.2001 (5) (9)

3.8 ADDITIONAL REMARKS

4.1 ACUTE/PROLONGED TOXICITY TO FISH

Type	:	flow through
Species	:	Salmo gairdneri (Fish, estuary, fresh water)
Exposure period	:	96 hour(s)
Unit	:	mg/l
Analytical monitoring	:	no
NOEC	:	c = 25
LC0	:	c = 100
LC50	:	c > 100
Method	:	other: Methods for Acute Toxicity Tests with Fish. EPA-660/3-75-009
Year	:	1979
GLP	:	no
Test substance	:	as prescribed by 1.1 - 1.4
Remark	:	Groups consisting of 10 Rainbow trout were exposed to five concentrations of test substance (6.3, 12.5, 25, 50, and 100 mg/l) for 96 hours. A concurrent control group was included in the study. The fish were observed at 24, 48, 72, and 96 hours. Exposure levels are based on nominal concentrations of the test substance. No fish died during the conduct of this study. Thus the 96 hour LC50 is greater than 100 mg/l.
Reliability	:	(1) valid without restriction

06.06.2001 (17)

4.2 ACUTE TOXICITY TO AQUATIC INVERTEBRATES

4.3 TOXICITY TO AQUATIC PLANTS E.G. ALGAE

4.4 TOXICITY TO MICROORGANISMS E.G. BACTERIA

4.5.1 CHRONIC TOXICITY TO FISH

4.5.2 CHRONIC TOXICITY TO AQUATIC INVERTEBRATES

4.6.1 TOXICITY TO SOIL DWELLING ORGANISMS

4.6.2 TOXICITY TO TERRESTRIAL PLANTS

4.6.3 TOXICITY TO OTHER NON-MAMM. TERRESTRIAL SPECIES

4.7 BIOLOGICAL EFFECTS MONITORING

4.8 BIOTRANSFORMATION AND KINETICS

4.9 ADDITIONAL REMARKS

5.1.1 ACUTE ORAL TOXICITY

Type	:	LD50
Species	:	rat
Strain	:	Sprague-Dawley
Sex	:	male/female
Number of animals	:	20
Vehicle	:	other: corn oil
Value	:	> 5000 mg/kg bw
Method	:	EPA OTS 798.1175
Year	:	1984
GLP	:	no
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	Ten male and ten female Sprague Dawley rats received the test substance by oral gavage at a dose of 5000 mg/kg. The animals were observed daily for 14 days for clinical signs and mortality. All animals were necropsied and all underwent gross examination at the end of the observation period.
Result	:	The single dose of 5000 mg/kg produced no mortality. Clinical signs reported shortly after dosing included mild depression, piloerection, wet fur, diarrhea, and red facial stains. These symptoms disappeared and all animals appeared normal by day 7. Necropsies and gross examinations at the end of day 14 found no treatment-related changes in any animal. The acute oral LD50 is greater than 5000 mg/kg.
Reliability	:	(1) valid without restriction

06.06.2001 (16)

Type	:	LD50
Species	:	rat
Strain	:	Sprague-Dawley
Sex	:	male/female
Number of animals	:	10
Vehicle	:	other: none
Value	:	> 20000 mg/kg bw
Method	:	OECD Guide-line 401 "Acute Oral Toxicity"
Year	:	1995
GLP	:	yes
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	Five male and five female Sprague-Dawley rats received a single oral gavage dose of 20,000 mg/kg of the neat test substance. The animals were observed daily for 14 days, and were then sacrificed and necropsied.
Result	:	There was no mortality in this study. The gross examination of each animal at necripsy did not reveal any treatment-related abnormalities. The acute oral LD50 is greater than 20,000 mg/kg.
Conclusion	:	The test substance has very low acute oral toxicity.
Reliability	:	(1) valid without restriction

02.08.2001 (4)

Type	:	other: Acute Neurotoxicity Test
Species	:	hen
Strain	:	other: White Leghorn
Sex	:	female
Number of animals	:	7
Vehicle	:	other: none
Value	:	= 11350 mg/kg bw
Method	:	other: NTE Assay and behavior Assessment
Year	:	1980
GLP	:	yes
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	Seven adult White Leghorn hens received a single 11.35 g/kg dose of the

test substance by oral gavage. Three of the hens were observed daily for three weeks for behavioral changes. The remaining four hens were sacrificed about 24 hours after dosing. The brains were removed and processed to allow the measurement of enzyme activity. Brain neurotoxic esterase (NTE) activity and brain cholinesterase activity were measured. Enzyme from the brains of non-treated hens were also analyzed to provide baseline enzyme activities.

Result : The 3 hens that received 11.35 g/kg Fyrquel EHC showed no adverse effects (no clinical signs) for 9 days, after which motor incoordination became apparent. The severity of the incoordination increased up to the time the hens were sacrificed. One hen was unable to stand 17 days after treatment. In the 4 hens sacrificed 24 hours after receiving a single 11.35 g/kg dose of Fyrquel EHC, brain cholinesterase activity was inhibited by about 85% and NTE activity was decreased about 94%. The positive control, TOCP, inhibited brain cholinesterase and NTE activity by about 73% and 89%, respectively.

Reliability : (1) valid without restriction
02.08.2001 (12)

5.1.2 ACUTE INHALATION TOXICITY

5.1.3 ACUTE DERMAL TOXICITY

Type : LD50
Species : rabbit
Strain : New Zealand white
Sex : male/female
Number of animals : 10
Vehicle : other: none
Value : > 2000 mg/kg bw
Method : EPA OTS 798.1100
Year : 1984
GLP : no
Test substance : as prescribed by 1.1 - 1.4
Method : The fur on 5 male and 5 female New Zealand White rabbits was closely clipped and the skin was abraided on half the animals. The skin on the other half of the animals was left intact. Twenty-four hours later, the test substance was applied neat at 2000 mg/kg to the clipped area, which was then wrapped with a gauze binder. After 24 hours, the gauze binder and the test substance was removed. The animals were observed for 14 days for skin irritation and systemic toxicity.

Result : There were no deaths during the 14 day observation period. Mild erythema and edema were observed 24 hours after test substance application. Trixylenyl phosphate expressed low toxicity after acute dermal exposure. The acute dermal LD50 is greater than 2000 mg/kg.

Reliability : (1) valid without restriction
06.06.2001 (13)

5.1.4 ACUTE TOXICITY, OTHER ROUTES

5.2.1 SKIN IRRITATION

Species : rabbit
Concentration : 100 %
Exposure : Semiocclusive

Exposure time	:	4 hour(s)
Number of animals	:	6
PDII	:	
Result	:	slightly irritating
EC classification	:	irritating
Method	:	EPA OTS 798.4470
Year	:	1984
GLP	:	no
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	An area of skin on six albino rabbits was shaved 24 hours prior to application of test substance. Each shaved area had an abraded and nonabraded section. A 0.5 ml dose was applied to each rabbit and the application sites were immediately covered with a gauze patch that was wrapped with a rubber dam. The patches and test material were removed from each animal four hours after exposure. Skin irritation was graded according to the Draize method at 4, 24, and 72 hours after treatment.
Result	:	At the 24 hour observation period, all six rabbits showed mild erythema at the abraded and nonabraded sites. Two animals continued to express mild erythema at 72 hours.
Reliability	:	(1) valid without restriction

06.06.2001 (15)

5.2.2 EYE IRRITATION

Species	:	rabbit
Concentration	:	100 %
Dose	:	.1 ml
Exposure Time	:	.5 minute(s)
Comment	:	other: The treated eyes of 3 rabbits were washed after 30 seconds while the treated eyes of the remaining 6 rabbits went unwashed.
Number of animals	:	9
Result	:	slightly irritating
EC classification	:	irritating
Method	:	EPA OTS 798.4500
Year	:	1984
GLP	:	no
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	One-tenth of an ml of the test substance was placed in the conjunctival sac of the left eye of nine rabbits. The right eye acted as an untreated control eye. The treated eyes of 3 rabbits were washed about 30 seconds after application whereas the treated eyes in the remaining 6 rabbits were left unwashed. The eyes were examined at 1, 24, 48, and 72 hours, and at 4 and 7 days after treatment. Fluorescein was used during the 24 hour examination. The eyes were scored using the Draize method .
Result	:	Mild to moderate irritation, observed at 1 hour in both washed and unwashed eyes, consisted of redness of the conjunctiva. There were no effects on the cornea or iris. The irritation was gone by the 24 hour observation. The results of this test indcate that trixylenyl phosphate is a mild eye irritant.
Reliability	:	(1) valid without restriction

06.06.2001 (14)

5.3 SENSITIZATION

5.4 REPEATED DOSE TOXICITY

5.5 GENETIC TOXICITY 'IN VITRO'

Type	:	Ames test
System of testing	:	Salmonella typimurium
Concentration	:	.01, .05, .10, .50, and 1.0 ug/plate
Cycotoxic conc.	:	
Metabolic activation	:	with and without
Result	:	negative
Method	:	EPA OTS 798.5265
Year	:	1978
GLP	:	
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	Five tester strains of Salmonella typhimurium, TA-1535, TA-1537, TA-1538, TA-98, and TA-100, were exposed to the test substance in the presence and absence of a metabolic activing system, consisting of an Aroclor-induced rat liver S9 fraction. A 1.0% solution of trixylenyl phosphate (DMSO used as diluent) was tested at .01, .05, .10, .50, and 1.0 ug/plate.
Result	:	Trixylenyl phosphate did not induce a positive response in any of the tester strains, either in the presence or absence of a metabolic activating system.
Reliability	:	(4) not assignable

02.08.2001 (7)

Type	:	Ames test
System of testing	:	Salmonella typhimurium
Concentration	:	2, 6, 18, 54, and 162 ug/0.1 ml
Cycotoxic conc.	:	
Metabolic activation	:	with and without
Result	:	negative
Method	:	EPA OTS 798.5265
Year	:	1984
GLP	:	
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	Trixylenyl phosphate was evaluated in four testor strains, TA-1535, TA-1537, TA-98, and TA-100, for mutagenic activity, in the presence and absence of a metabolic activating system. DMSO was used as the diluent, to achieve doses of 2, 6, 18, 54, and 162 ug/0.1 ml.
Result	:	Trixylenyl phosphate did not induce a positive response in any of the four testor strains, either with or without metabolic activation.
Reliability	:	(4) not assignable

06.06.2001 (2)

5.6 GENETIC TOXICITY 'IN VIVO'

5.7 CARCINOGENITY

5.8 TOXICITY TO REPRODUCTION

5.9 DEVELOPMENTAL TOXICITY/TERATOGENICITY

5.10 OTHER RELEVANT INFORMATION

Type	:	Neurotoxicity

Method	:	Trixylenyl phosphate, as commerical Fyrquel EHC, was administered in a single dose by oral gavage to groups consisting of 4 adult White Leghorn hens each, at dose levels of 11.4, 114, or 1140 mg/kg. A negative control (corn oil) group consisting of 4 hens and a positive control group (TOCP) containing 8 hens were included in the study. The endpoints measured were brain neurotoxic esterase (NTE) activity and plasma cholinesterase activity. About 24 hours after treatment, blood samples were collected and the animals were then sacrificed by decapitation and the brains were removed and processed for NTE activity assessment.
Result	:	Inhibition of NTE activity of at least 70% is thought to correspond to a dose that may cause peripheral neuropathy. Percent NTE inhibition for the low, mid, and high dose groups were 2.0, 13.4, and 55.8 percent, respectively. The positive control group exhibited NTE inhibition of 90.3%. Since a clear dose-response was observed, the data suggest that exposure to very high levels of trixylenyl phosphate could cause neurotoxicity. However, it is highly unlikely that humans could be exposed to the g/kg doses necessary to induce both NTE inhibition of at least 70% and the corresponding neuropathy. Cholinesterase activity was significantly inhibited in the animals from the mid and high dose groups.
Reliability	:	(1) valid without restriction

06.06.2001 (11)

5.11 EXPERIENCE WITH HUMAN EXPOSURE

(1) Atkinson, R. J. Inter. Chem. Kinet. 19:799-828, 1987.

(2) Ciba-Geigy Ltd study. Salmonella/Mammalian Microsome Mutagenicity Test with TK 10 509 (Reofos 95). 1984. Obtained from Toxline search, referenced as EPA/OTS Doc. #40-8442159.

(3) Hawley's Condensed Chemical Dictionary. 11th Edition, New York, Van Nostrand Reinhold Company, 1988, page 1179.

(4) Hazleton Wisconsin study N0. HWI 41001596, Acute Oral Toxicity Study of E-94163 in Rats. Conducted for Akzo Nobel Chemicals Inc., 1995.

(5) Lyman, W. J. et al. Handbook of Chemical Property Estimation Methods. McGraw Hill, new York, pages 2-14, 1982.

(6) Material Safety Data Sheet, Akzo Nobel Functional Chemicals LLC, October 2, 2000.

(7) Microbiological Associates report No. ICG/T-78-114. Mutagenic Screening Test Salmonella/Microsomal Assay of Trixylenyl Phosphate Ester (MP-600). 1978. Obtained from Toxline search, referenced as EPA/OTS Doc. #40-7842034

(8) Saeger, V. W. et al., Environ. Sci. Technol. 13:840-844, 1979.

(9) Saeger, V. W., et al., Environ. Sci. Technol. 13:840-844, 1979.

(10) Saeger, v.w., Hicks, O., Kaley, R.G., and Tucker, E.S. Environmental fate of selected phosphate esters. Environ. Sci. Technol. 13:840-844. 1979.

(11) Stauffer Chemical Company report No. T-10553. Effect of Three Doses of Fyrquel EHC on Neurotoxic Esterase. 1981

(12) Stauffer Chemical Company study No. T-10264. Neurotoxicity Evaluation of Fyrquel EHC. 1980.

(13) Stauffer Chemical Company study No. T-10962. Acute Dermal Toxicity Study. 1984

(14) Stauffer Chemical Company study No. T-10962. Primary Eye Irritation Test. 1984

(15) Stauffer Chemical Company study No. T-10962. Primary Skin irritation Study. 1984.

(16) Stauffer Chemical Company study No. T-10962. Acute Oral Toxicity Study in Rats. 1984.

(17) Union Carbide Environmental Services Laboratory Study, The Acute Toxicity of Fyrquel EHC to the Rainbow Trout. Conducted for Stauffer Chemical Company, 1979.

7.1 END POINT SUMMARY

7.2 HAZARD SUMMARY

7.3 RISK ASSESSMENT